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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/711,680 | 09/30/2004 | Anant Shankar KAMATH | TI-38004 | 5679 |

23494 7590 06/30/2006

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| EXAMINER |
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TRINH, SONNY

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| ART UNIT | PAPER NUMBER |
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2618

DATE MAILED: 06/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/711,680

Applicant(s)

KAMATH ET AL.

Examiner

Sonny TRINH

Art Unit

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-5, 15 and 18 is/are rejected.
- 7) ☒ Claim(s) 6-14 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The spacing of the lines of the specification and the spacing of the letters in each word is such as to make reading difficult. New application papers with lines 1½ or double spaced with easily readable fonts on good quality paper are required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-4, 16, 18** are rejected under 35 U.S.C. 102(b) as being anticipated by Linquist et al. (hereinafter "Linquist"; U.S. Patent number 6,373,909).

Regarding **claim 1**, with reference to figure 1 and description, Linquist discloses a receiver system processing an input signal containing signals of interest and unwanted interference signals (abstract), wherein said signals of interest are present in a frequency band of interest, said input signal being formed using a carrier frequency (inherent), said receiver system comprising:

a mixer processing said input signal to generate an intermediate signal in the form of electric current (figure 1, column 1 line 64 to column 2 line 21), wherein said intermediate signal is generated with said frequency band of interest centered at a first frequency not equal to said carrier frequency (via mixers 121, 123, see figure 1); and

a filter circuit filtering said unwanted interference signals from said intermediate signal received in the form of electric current to generate said signals of interest as an output signal (figure 1, filters 120, 124, claim 1).

Regarding **claim 2**, Linquist further teaches that said output signal is generated in the form of electric voltage, said receiver system further comprising an analog to digital converter (ADC) converting said output signal in the form of electric voltage to a plurality of digital codes representing said signals of interest (figure 1, phase ADC, please see description for further details).

Regarding **claim 3**, Linquist further discloses a low noise amplifier which provides said input signal in an amplified form to said mixer (figure 1, filter 116, figure 6, filter 608).

Regarding **claim 4**, Linquist further discloses that the first frequency is lower than said carrier frequency (column 3 lines 19-59).

Regarding **claims 16 and 18**, these claims are the means and method claims as opposed to the system claim of claim 1 and are therefore rejected for the same reasons as given above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 5, 15** are rejected under 35 U.S.C. 103(a) as being obvious over Linquist.

Regarding **claim 5**, Linquist discloses the invention but does not disclose that the first frequency equals 0. However, a direct-conversion receiver adopting the zero-IF technique has the advantages of a simple circuit structure, low cost manufacture and smaller size as compared to those of a superheterodyne receiver and is therefore would have been obvious and well within the level of a person of ordinary skill in the art.

Regarding **claim 15**, Linquist discloses the invention but does not disclose that the receiver system is comprised in a Wireless Local Area Network (WLAN) receiver. However, since Linquist discloses that "... the communication terminal can be any communication device that communicates over a wireless communication link such as a cordless or cellular mobile phone..." (column 3 lines 19-32). Therefore, it would have been obvious and well within the level of a person of ordinary skill in the art to also use the system in a WLAN environment.

4. **Claims 19-20** are rejected under 35 U.S.C. 103(a) as being obvious over Linquist in view of Behzad (U.S. Patent Application Publication number US 2004/0152437 A1)

Regarding **claims 19-20**, Linquist discloses the invention but does not disclose that the output signal is provided in a voltage domain nor the method further comprising sampling said output signal in said voltage domain.

In an analogous art, Behzad discloses a RF transceiver including circuitry that enables received RF signals to be down converted to baseband frequencies and baseband signals to be up-converted to wideband RF signals prior to transmission

without requiring conversion to an intermediate frequency (abstract). Behzad further discloses that the output stage converts the mixing stage output signal from the current domain to a voltage domain for producing a mixer module output signal (paragraph [0010], claim 1) and obviously the signals are sampled in the voltage domain.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the conversion from the current domain to voltage domain, as taught by Behzad, to the system of Linquist. The motivation for incorporating would be to reduce the noise/interference at the output.

Allowable Subject Matter

5. **Claims 6-14, 17** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding **claim 6**, the applied references fail to disclose or render obvious the claimed limitations, specifically wherein said mixer is implemented with a high gain to generate said intermediate signal with a larger swing of electric current compared to the swing of electric voltage in response to changes in input signal.

Regarding **claim 8**, the applied references fail to disclose or render obvious the claimed limitations, specifically the wherein said mixer comprises: a first transistor, a second transistor and a third transistor, each comprising a source terminal, a drain terminal and a gate terminal; and a first current source and a second current source

together setting a bias point for linear operation of each of said first transistor, said second transistor and said third transistor, wherein one terminal of each of said first current source and said second current source is connected to a supply voltage, the other terminal of said first current source being connected to the drain terminal of said second transistor at a first node, the other terminal of said second current source being connected to the drain terminal of said third transistor, the gate terminal of said each of said second transistor and said third transistor being connected to receive a fixed frequency signal, the source terminals of said second transistor and said third transistor being connected to the drain terminal of said first transistor, the source terminal of said first transistor being connected to Vss, and the gate terminal of said first transistor being connected to receive said input signal.

Regarding **claim 17**, the applied references fail to disclose or render obvious the claimed limitations, specifically wherein the means for filtering amplifies said signals of interest and provides said output signal in a voltage domain.

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sonny TRINH whose telephone number is 571-272-7927. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward URBAN can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

6/14/06


SONNY TRINH
PRIMARY EXAMINER